Complete set of claims

1. (Currently Amended) A method for bonding a fibrous substrate surface to a second substrate surface selected from the group consisting of an elastomer substrate, an engineering plastic substrate, a metal substrate, and a fiber-reinforced composite substrate, comprising:

(a) providing a catalyst at the fibrous substrate surface;

(b) contacting the catalyst on the fibrous substrate surface with a metathesizable material so that the metathesizable material undergoes a metathesis reaction; and

(c) contacting the fibrous substrate surface with a second substrate surface.

2. (Currently Amended) A method according to claim 1 wherein the fibrous substrate comprises a material selected from the group consisting of polyester, polyethylene, polypropylene, carbon, polyamide nylon ~~or~~ and aramid polyamide.

3. (Original) A method according to claim 2 wherein the second substrate surface comprises an elastomeric substrate.

4. (Original) A method according to claim 3 wherein the elastomeric substrate is selected from the group consisting of natural rubber, polychloroprene, polybutadiene, polyisoprene, styrene-butadiene copolymer rubber, acrylonitrile-butadiene copolymer rubber, ethylene-propylene copolymer rubber, ethylene-propylene-diene terpolymer rubber, butyl rubber, brominated butyl rubber, alkylated chlorosulfonated polyethylene rubber, hydrogenated nitrile rubber, poly(n-butyl acrylate), thermoplastic elastomer and mixtures thereof.

5. (Original) A method according to claim 3 wherein the elastomeric substrate is natural rubber or ethylene-propylene-diene terpolymer rubber.

6. (Currently Amended) A method according to claim 1 wherein step (a) comprises soaking the fibrous substrate in a catalyst solution in a carrier, removing the carrier, and step (b) comprises dipping the catalyst-soaked fibrous substrate into a metathesizable material and allowing polymerization.

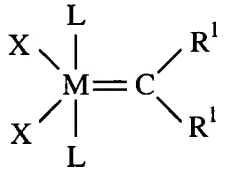
7. (Original) A method according to claim 1 wherein step (c) comprises placing the fibrous substrate between two layers of second substrate surface in a mold and curing the second substrate surface with heat and pressure.

8. (Original) A method according to claim 1 wherein the catalyst is dissolved or mixed into a liquid carrier fluid.

9. (Currently Amended) A method according to claim 1 wherein the catalyst is included as a component of the ~~first~~ fibrous substrate.

10. (Original) A method according to claim 1 wherein the catalyst is selected from at least one of a rhenium compound, ruthenium compound, osmium compound, molybdenum compound, tungsten compound, titanium compound, niobium compound, iridium compound and $MgCl_2$.

11. (Original) A method according to claim 10 wherein the catalyst has a structure represented by



wherein M is Os, Ru or Ir; each R^1 is the same or different and is H, alkenyl, alkynyl, alkyl, aryl, alkaryl, aralkyl, carboxylate, alkoxy, allenylidenyl, indenyl, alkylalkenylcarboxy, alkenylalkoxy, alkenylaryl, alkynylalkoxy, aryloxy, alkoxycarbonyl, alkylthio, alkylsulfonyl, alkylsulfinyl, amino or amido; X is the same or different and is either an anionic or a neutral ligand group; and L is the same or different and is a neutral electron donor group.

12. (Original) A method according to claim 11 wherein X is Cl, Br, I, F, CN, SCN, N_3,
O-alkyl or O-aryl; L is a heterocyclic ring or $Q(R^2)_a$ wherein Q is P, As, Sb or N; R^2 is H, cycloalkyl, alkyl, aryl, alkoxy, arylate, amino, alkylamino, arylamino, amido or a heterocyclic ring; and a is 1, 2 or 3; M is Ru; and R^1 is H, phenyl, -CH=C(phenyl)$_2$,
-CH=C$(CH_3)_2$ or -C$(CH_3)_2$(phenyl).

13. (Original) A method according to claim 10 wherein the catalyst is a phosphine-substituted, an imidazolylidene-substituted, or a dihydroimidazolylidene-substituted ruthenium carbene.

14. (Original) A method according to claim 13 wherein the catalyst is bis(tricyclohexylphosphine)benzylidene ruthenium (IV) dichloride, tricyclohexylphosphine[1,3-bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazol-2-ylidene][benzylidene]ruthenium (IV) dichloride, or tricyclohexylphosphine[1,3-bis(2,3,6-trimethylphenyl)-4,5-imidazol-2-ylidene][benzylidene]ruthenium (IV) dichloride.

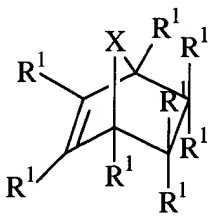
15. (Original) A method according to claim 1 wherein the catalyst is stable in the presence of moisture and oxygen and can initiate polymerization of the metathesizable material upon contact at room temperature.

16. (Original) A method according to claim 1 wherein the metathesizable material is selected from ethene, α-alkene, acyclic alkene, acyclic diene, acetylene, cyclic alkene, cyclic polyene and mixtures thereof.

17. (Currently Amended)) A method according to claim 16 wherein the metathesizable material comprises a cycloolefin <u>cyclic alkene</u>.

18. (Original) A method according to claim 17 wherein the metathesizable material is a monomer or oligomer selected from norbornene, cycloalkene, cycloalkadiene, cycloalkatriene, cycloalkatetraene, aromatic-containing cycloolefin and mixtures thereof.

19. (Original) A method according to claim 18 wherein the metathesizable material has a structure represented by



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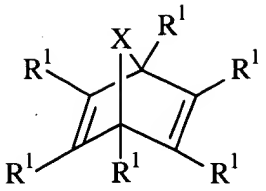

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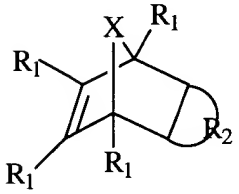

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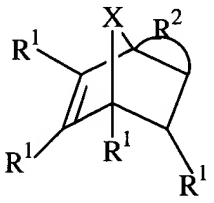

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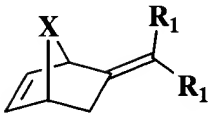


wherein X is CH_2, CHR^3, $C(R^3)_2$, O, S, $N\text{-}R^3$, $P\text{-}R^3$, $O{=}P\text{-}R^3$, $Si(R^3)_2$, $B\text{-}R^3$ or $As\text{-}R^3$; each R^1 is independently H, CH_2, alkyl, alkenyl, cycloalkyl, cycloalkenyl, aryl, alkaryl, aralkyl, halogen, halogenated alkyl, halogenated alkenyl, alkoxy, oxyalkyl, carboxyl, carbonyl, amido, (meth)acrylate-containing group, anhydride-containing group, thioalkoxy, sulfoxide, nitro, hydroxy, keto, carbamato, sulfonyl, sulfinyl, carboxylate, silanyl, cyano or imido; R^2 is a fused aromatic, aliphatic or heterocyclic or polycyclic ring; and R^3 is alkyl, alkenyl, cycloalkyl, cycloalkenyl, aryl, alkaryl, aralkyl or alkoxy..

20. (Original) A method according to claim 17 wherein the

metathesizable material comprises ethylidenenorbornene monomer or oligomer, dicyclopentadiene or bicyclo[2.2.1]hept-5-en-2-yl-trichlorosilane.

21. (Original) A method for bonding a fibrous substrate to an elastomeric substrate comprising:

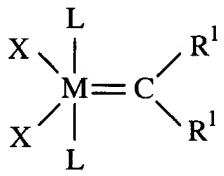
(a) applying a catalyst on the fibrous substrate;

(b) contacting the catalyst on the fibrous substrate with a metathesizable material so that the metathesizable material undergoes a metathesis reaction;

(c) contacting the fibrous substrate with the elastomeric substrate to form a composite material; and

(d) curing said composite material.

22. (Original) A method according to claim 21 wherein the catalyst has a structure represented by



wherein M is Os, Ru or Ir; each R^1 is the same or different and is H, alkenyl, alkynyl, alkyl, aryl, alkaryl, aralkyl, carboxylate, alkoxy, allenylidenyl, indenyl, alkylalkenylcarboxy, alkenylalkoxy, alkenylaryl, alkynylalkoxy, aryloxy, alkoxycarbonyl, alkylthio, alkylsulfonyl, alkylsulfinyl, amino or amido; X is the same or different and is either an anionic or a neutral ligand group; and L is the same or different and is a neutral electron donor group.

23. (Original) A method according to claim 22 wherein X is Cl, Br, I, F, CN, SCN, N_3,
O-alkyl or O-aryl; L is a heterocyclic ring or $Q(R^2)_a$ wherein Q is P, As, Sb or N; R^2 is H, cycloalkyl, alkyl, aryl, alkoxy, arylate, amino, alkylamio, arylamino, amido or a heterocyclic ring; and a is 1, 2 or 3; M is Ru; and R^1 is H, phenyl, -$CH=C(phenyl)_2$,
-$CH=C(CH_3)_2$ or -$C(CH_3)_2$(phenyl).

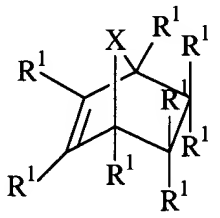
24. (Original) A method according to claim 21 wherein the catalyst is a phosphine-substituted, an imidazolylidene-substituted, or a dihydroimidazolylidene-substituted ruthenium carbene.

25. (Original) A method according to claim 24 wherein the catalyst is bis(tricyclohexylphosphine)benzylidene ruthenium (IV) dichloride, tricyclohexylphosphine[1,3-bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazol-2-ylidene][benzylidene]ruthenium (IV) dichloride, or tricyclohexylphosphine[1,3-bis(2,3,6-trimethylphenyl)-4,5-imidazol-2-ylidene][benzylidene]ruthenium (IV) dichloride.

26. (Original) A method according to claim 21 wherein the metathesizable material comprises a cycloolefin.

27. (Original) A method according to claim 26 wherein the metathesizable material is a monomer or oligomer selected from norbornene, cycloalkene, cycloalkadiene, cycloalkatriene, cycloalkatetraene, aromatic-containing cycloolefin and mixtures thereof.

28. (Original) A method according to claim 27 wherein the metathesizable material comprises a norbornene having a structure represented by



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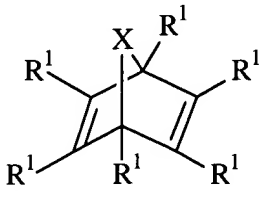

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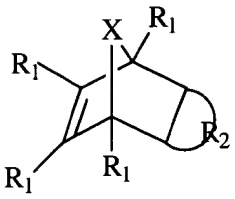

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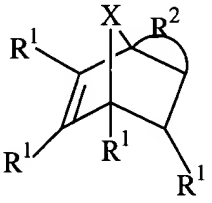

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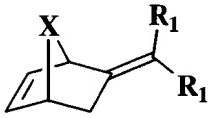

wherein X is CH_2, CHR^3, $C(R^3)_2$, O, S, N-R^3, P-R^3, O=P-R^3, $Si(R^3)_2$, B-R^3 or As-R^3; each R^1 is independently H, CH_2, alkyl, alkenyl, cycloalkyl, cycloalkenyl, aryl, alkaryl, aralkyl, halogen, halogenated alkyl, halogenated alkenyl, alkoxy, oxyalkyl, carboxyl, carbonyl, amido, (meth)acrylate-containing group, anhydride-containing group, thioalkoxy, sulfoxide, nitro, hydroxy, keto, carbamato, sulfonyl, sulfinyl, carboxylate, silanyl, cyano or imido; R^2 is a fused aromatic, aliphatic or heterocyclic or polycyclic ring; and R^3 is alkyl, alkenyl, cycloalkyl, cycloalkenyl, aryl, alkaryl, aralkyl or alkoxy.

29. (Original) A method according to claim 26 wherein the metathesizable material comprises ethylidenenorbornene monomer or oligomer, dicyclopentadiene or bicyclo[2.2.1]hept-5-en-2-yl-trichlorosilane.

30. (Original) A method according to claim 21 wherein the fibrous substrate is polyester, nylon or polyamide.

31. (Original) A method according to claim 30 wherein the second substrate surface is selected from the group consisting of natural rubber,

polychloroprene, polybutadiene, polyisoprene, styrene-butadiene copolymer rubber, acrylonitrile-butadiene copolymer rubber, ethylene-propylene copolymer rubber, ethylene-propylene-diene terpolymer rubber, butyl rubber, brominated butyl rubber, alkylated chlorosulfonated polyethylene rubber, hydrogenated nitrile rubber, silicone rubber, fluorosilicone rubber, poly(n-butyl acrylate), thermoplastic elastomer and mixtures thereof.

32. (Original) A method according to claim 31 wherein the elastomeric substrate is natural rubber or ethylene-propylene-diene terpolymer rubber.

33. (Original) A method according to claim 21 wherein steps (a) and (b) take place at room temperature.

34 – 48 (Canceled)

49 (New) The method according to claim 21 wherein said fibrous substrate is a reinforcing cord and said second substrate is an elastomer flowed through the reinforcing cord and cured to form a tire, belt or hose.

50 (New) The method according to claim 1 wherein said fibrous substrate is a reinforcing cord and said second substrate is a post-vulcanized or cured elastomer.